

ZERO BEAT

HAMPDEN COUNTY RADIO ASSOCIATION, INC

1 QSL BUREAU

SPRINGFIELD, MASS

ARRL AFFILIATED, 34th YEAR

NEXT MEETING - MAR. 5 LINEAR AMPLIFIERS

Don't miss March's meeting where Gent, WA1CQF, will be our featured speaker. Gent will be giving a talk on linear amplifiers complete with an original homebrew model specially designed and built for this presentation. If you saw his presentation last year, you know what a fine job Gent does both as an informative and entertaining speaker and as a top-notch homebrewer. So here's a great chance to learn more about linear amplifiers, how they work, and how they're built.

SEE YOU THERE

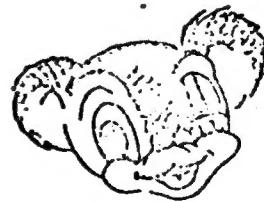
FEBRUARY'S MEETING

Bill Poelmitz, K1MM, gave a fascinating talk with slides on DXing. The program started late due to the snow, which also explains the small attendance of about 70 hams. Bill's slides of Sprately were great, and many were salivating at the idea of being there. The group then journeyed to Africa, to participate in a DX contest from Kenya. A fun evening, and you should be sorry if you missed it! By the way, Bill is also in our QSL bureau, such talent in one so young!

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NOTE: NEW ADDRESS



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TIDBITS

KAlCTM is putting a Progline on six meters...K1WVX worked Nepal... Hiram Percy Maxim is featured in a full length article in February "American Rifleman", as the inventor of the silencer. ...K1IJU, K1IJV, W1JP, and WB1ABF are operating as VP2-- on Tortola, have you worked them yet?...W1DNB sends greetings from Florida to all his friends...New member WAlMAO has an interesting column in February "QST". We'll have to get Stan as a guest speaker in the future...Only six members showed any interest in the Handi-ham project, so it is KAPUT!...W1MM got to meet K1MM at the Feb. meeting...W1NPL has a TRS 80 mdl 1, and wants to know how to program it to print lower case letters without always shifting...K1BE would like to buy/borrow 1980,'81 issues of "73" for a future ZB article he's doing....HCRA two meter net, 144.155 USB, Monday evenings at 8 local time, check in...

A friend to everyone, an inspiration to all, our pal, K1YQQ, Chester Wisiolek, is now a silent key. Well do I remember becoming club president, and on the inherited board of directors was this "oldster" who needed a cane to get around. "Never going to see him at the board meetings," I thought. Was I ever wrong! The inspiration and fire he brought to the club was fantastic. Chet was a hard and cheerful worker.

K1YQQ worked on myriad projects; HCRA club officer, MTARA officer, Brown Baggers un-official president; the list goes on and on. I remember him at field days, there to help, not just to watch. Chet was thrilled to be named "Ham of the Year" in 1980, but he richly deserved it. Chester never quit, never used his physical problems as an excuse not to get things done. Chet gave a lot of love, and we all loved him in return. We miss him.

de K1BE

"HE IS NOT GONE, BUT IS JUST WAITING ON THE TRAIL AHEAD."

It is with deep regret we announce the passing of an era in Amateur Radio. On Monday February 8, 1982 Chet Wisiolek K1YQQ Passed away. The Klyqq call was a familiar sound at the H.C.R.A. meetings as well as the M.T.R.A. and Brown Baggers. To the many of us who were friends and pupils of CHET, He will be sadly missed.

On behalf of the Officers, Board and Membership of the Hampden County Radio Association, we wish to extend Sincere condolences to the family of K1YQQ

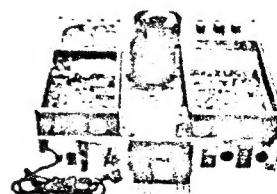
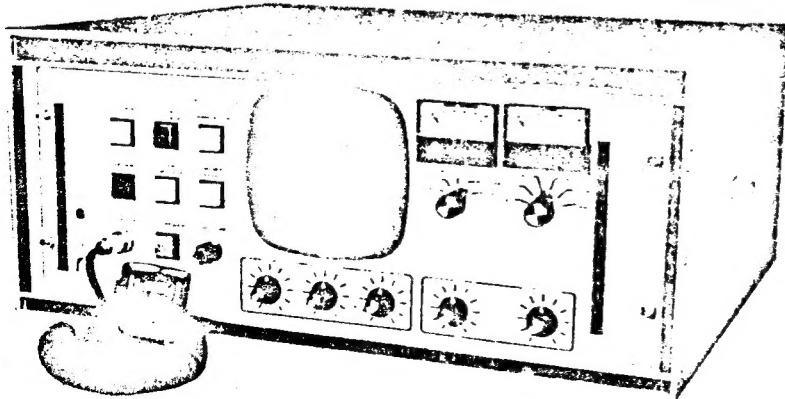
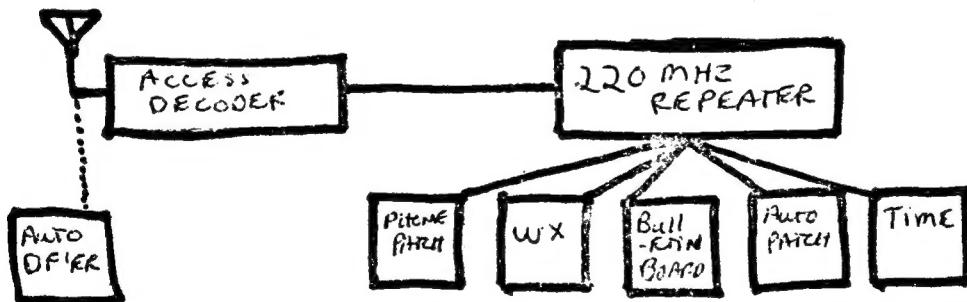
ORGANIZING THE HAMPDEN COUNTY REPEATER ASSOCIATION:
HOW IT MIGHT BE RUN!!!!

Assuming one of our filthy rich members left the club \$5,000.00 dollars, here's how we could set up the Hampden County Repeater Association! We'd buy a manufactured repeater on the 220 mhz band. Then set up the repeater ass'n as a seperate but affiliated club of the Hampden County Radio Ass'n. (HCRA) Members wanting to use the repeater would pay an initiation fee of \$10.00, and would have to belong to the HCRA first. Zero Beat would have a special section for the HC Repeater Ass'n news. The repeater upkeep and maintenance would be paid by having a once-a-year raffle, with every member required to sell X number of tickets. Because they already would belong to the HCRA, the repeater trustees could forget about scheduling meetings, printing a newsletter, etc and concentrate on the machine. And just what would the machine be like????

The best band to be on would be 220 mhz; scanners can't receive it, and rigs are readily available. Coverage is similar to two meters, but not as crowded. It might be best to make it a closed repeater, with some type of sub-code access. Members could receive the access circuit when they join. By making the circuit club property, we'd get it back when members quit. Codes could be changed every year to keep the nuts and jammers out.

Circuits on the machine could provide phone patches, autopatch, time of day, weather, bulletins on tape, and other goodies. A spot on Wilbraham Mountain might be available to put the machine. What are your thoughts? Should it be open or closed? What other goodies should be included?

Now, to find the member who wants to be immortalized and has \$5,000.00.....



Options available: Duplexers, 'PL', Auto-patch/Land Line Control, Hi/Lo Power, Various Tone & Timer Bds., Racks, Antennas, etc. - - -

BOB, EUNIE AND TOM

Bob (W1KUL) and Eunie (W1UKR) Gordon have been spending the winter in Florida in their new home, far away from the snow and cold. Their address is P.O. Box 2543, Homossassa Springs, Fla., 32647.

For those of us who don't write as we should (which is why this article did not appear in the last issue of "Zero Beat") you may want to contact Bob and Eunie by radio. They are on the air everyday on 15 meters at 21.360 MHZ (plus or minus 10 MHZ) at 10:00 AM and 4:00 PM, local time. This includes Saturday and Sunday. Tom Barrett, W1KUE, lives only a stones throw away from Bob and Eunie so be sure to pass your best wishes to Tom, as well. Bob, it is rumored, has turned to poet laureate of the ham world and offers the following as an example of his new expertise:

I listened to my old bandspreader.
A baker man then called CQ.
I cast may watts upon the breader.
Conversation did ensue.

As Bob says, "This illustrates the horrid consequences of an idle mind".

For Sale

Ham Radio magazines.
March 1968 thru Dec. 1981.
Complete-Excellent condition. \$35 Lot.

Robert M. Stephens, W1MM. Tel. 532-6020 Holyoke

FOR SALE

20 METER QUAD	\$20.00
2750 Volt 600 ma plate supply in roll around cabinet	\$30.00
Kilowatt Transmatch with roller inductor and dual meters for SWR	\$100.00

WA1CQF, Gent IAM 413 737-9426

<u>FOR SALE</u> :	TRS 80 MODEL 1 LEVEL 1 16K	\$375.00
	YAESU FTdx570	\$350.00
	matching speaker	\$25.00
	Unique wire tuner	\$50.00
	YAESU microphone	\$35.00

Call Ray KA1CRG 525-6202

ZERO BEAT

FYI!!!!

U.S. HAM POPULATION: (As of 10/31/81) WESTERN MASS:

Extra	29,387
Advanced	93,865
General	126,247
Technician	76,538
Novice	79,082

Extra	982
Advanced	2500
General	3800
Technician	2500
Novice	2000

Total 405,119

Total 11,823

Russia launches satellites

Six Russian satellites, RS3 through RS8, were launched on 17 December and are now in a nearly circular orbit around the Earth at an average altitude of nearly 1700km. The six are steadily moving away from each other with slightly differing orbits, and by 28 December their equatorial crossing times were spread over more than an hour and crossing points nearly 20 degrees.

TNX "WCR+OKADIC"

All six have been transmitting telemetry data, with each series preceded by the spacecraft's call (e.g., "RS3"). RS3, 5 and 7 all have the "robot transponders" described in *HR Report 354*, and at least one has been worked by a number of stations around the world. Robot availability is indicated by a "CQ," stopping when a signal appears in its input passband. Sending (for example) "RS5 de W9JUV AR" should bring the response "W9JUV de RS5 QSO nr xxx." It may also respond "QRZ," "QRM" or "RPT" if it misses a call, or "QRQ" or "QRS" to calls made below or above its 10-25 wpm acceptance range.

Beacon frequencies for the even-numbered birds are: RS4, 29360.29403; RS6, 29411.29453; and RS8, 29461.29502. Their 40 kHz-wide OSCAR-style transponders have apparently not yet been activated. One indication of transponder status in any of the six is the first, or "K," group telemetry number, which indicates power output. A reading of anything other than "K00" should mean the transponder is on.

Interference to the IGS satellites from terrestrial stations is becoming a real problem, with their covering so much of the 29.3-29.5 MHz spectrum. SSB, AM and FM signals have all been heard in recent weeks on top of or breaking over onto the new satellites. Non-satellite users should try to stay below 29.3 or above 29.5 to avoid the problem.

UPCOMING HAM EVENTS!

13 MAR SAT INTERSTATE REPEATER SOCIETY FLEA MARKET AT THE HILTON HOTEL
OFF EXIT 8 OF THE F.E. EVERETT TURNPIKE IN MERRIMACK, N.H. TABLES \$10.00.
THERE ARE 47 TABLES AVAIL. THE PRICE FOR TABLES WILL BE \$15.00 AT THE DOOR
IF ANY ARE LEFT. ADM. IS \$1.00 FOR EVERYBODY. SETUP AT 7:30AM DOORS OPEN AT
9:00AM FLEA MARKET FROM 9:00AM TO 4:00PM. TABLES MUST BE DOWN BY 5:00PM.
DINNER AND DANCE IN THE EVENING TICKETS WILL BE AVAIL. AT THE FLEA MARKET.
TALKIN ON .25/.85 OR .52 DIRECT. NO PETS. FOOD AVAIL. CONTACT DENNIS BLANCHARD
603-329-5465 FOR TABLE RESERVATIONS OR MORE INFO. [S]

8 MAY SAT. THE 9 TH ANNUAL HOSS TRADERS (THE BIGGEST AND BEST) TAILGATE
SWAPFEST, TO BE HELD AT DEERFIELD FAIR GROUNDS, DEERFIELD N.H.
(COVERED BUILDINGS IN CASE OF RAIN) ADMISSION \$1.00 NO COMMISSION OR
PERCENTAGE. EXCESS REVENUES TO THE BOSTON BURNS UNIT OF THE SHRINERS HOSPITAL
FOR CRIPPLED CHILDREN. FOOD AVAIL. TALKIN ON .52 DIRECT AND 146.40/147.00 [S]
!!!!!! TENTATIVE DATE AND INFO !!!!!!!

15 MAY SAT 76 FLEA MARKET AND AUCTION, FLEA MARKET 9 AM TO 12 NOON.
AUCTION NOON TO 5 PM. STEERES BEACH CLUB, WATERMAN LAKE, GREENVILLE RI.
USE I-295 TO EXIT 7B TAKE ROUTE 44 WEST 3.4 MILES. TALKIN .16/.76 AND
.34/.94 FLEA MARKET SPACE \$3.00 AUCTION 10% COMM. ON ALL SALES, EXCEPT 5%
SHOULD THE ITEM SOLD BRING IN EXCESS OF \$50.00. BANK AMERICARD PURCHASES
2% PAID BY THE PURSER. [S]

NOTES

THE FRAMINGHAM FLEA MARKET WILL BE HELD IN THE SPRING AT THE USUAL PLACE
(DRILL SHED) AROUND APRIL, BUT IN THE FALL IS IS RUMORED THAT IT WILL BE HELD
AT ANOTHER PLACE BECAUSE OF SPACE REQUIREMENTS.
(THERE ARE MORE AND MORE PEOPLE COMING EVERY YEAR)-NO SHOE HORN NEEDED I HPE!

THE A.R.F.L WILL HOLD ITS CONVENTION 2 OCT AND 3 OCT 1982 AT BOXBORO MASS.
THERE IS A RUMOR THAT THE CONVENTION WILL BE AT BOXPORF FROM NOW ON.

75
Chuck Clark, K4ZN
Assistant Director
Roanoke Division, ARRL

CONSTRUCTION

Phone patches

Amateurs are able to perform an important public service by enabling people to use their stations to contact one another. This service has proved invaluable to military personnel, explorers and seafarers, making their separation from family easier to endure. On many occasions, it has even been the means of saving lives.

We have been making phone patches ever since we have been able to use voice in our radio communications — since the 1930s. For most of that period, it has been technically illegal (it still is in Canada and in most other countries), but the authorities here never took any action against it because it hasn't hurt anyone and is a public service.

About 12 years ago, the FCC decided that telephone companies must allow customers to connect their own equipment to telephone lines, with suitable safeguards so that it does not impair service. From then on, phone patching became legal, but

also more expensive. The legally required interconnection network, called the QKT voice coupler, is actually not necessary for protection purposes, as there is no danger that amateur phone patches will impair telephone service in any way that the coupler can prevent, but the FCC and the telephone company say you must have it. And it costs nothing to wrap wires around screws, but the FCC requires modular plugs that cost several dollars each.

The telephone

Figure 1 is a simplified schematic of a telephone. When the phone is on the hook, S-1 is open and there is no DC path through the circuit. An alternating current, about 50 to 100 volts at 15 or 20 hertz, is applied to the line to cause the phone to ring. This passes through G-1 and the ringer.

When you lift the phone off the hook, S-1 closes, providing DC continuity

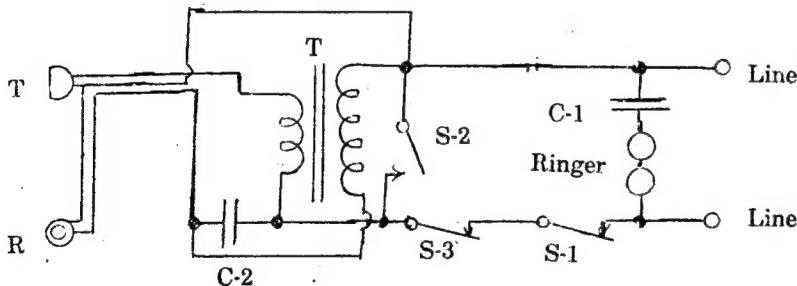


Figure 1

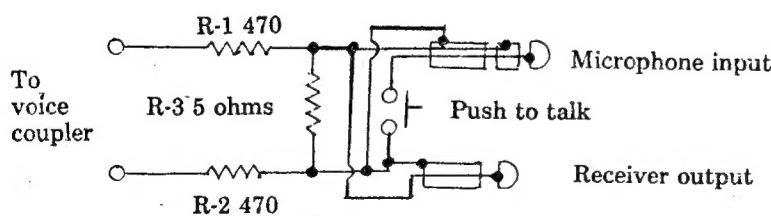


Figure 2

through the transmitter T, the primary of the induction coil I (we would probably call it a transformer), and this DC energizes a relay at the central office to signal that the phone is in use.

The transmitter T is a single-button carbon microphone. A capsule containing fine carbon dust is mechanically connected to a diaphragm. Sound waves pressing against the diaphragm serve alternately to compress and to release the pressure on the carbon grains, thereby changing the DC resistance of the carbon in step with the audio wave. The induction coil I matches the low impedance of the transmitter, about 50 ohms, to the higher impedance of the line, about 900 ohms.

Capacitor C-2 blocks the flow of DC through the primary of the induction coil I and the receiver R. Receiver R is much like one of the units on a radio headset.

If the phone has a rotary dial, S-2 will close as soon as the dial is moved, shorting the phone to prevent noise from the dial pulsing. As the dial returns, S-3 breaks the circuit once for each digit dialed, at a governed rate of 10 pulses per second. If a tone pad (Touch Tone is the Bell System's trademark) is used, the line is not broken, but a pair of audio tones is sent when a button is pressed.

Actual telephone instruments aren't quite as simple. The receiver and transmitter are connected to the induction coil in such a way that you hear your own voice as you talk, but somewhat weaker than the other party's. By experiment, telephone makers have found that this level causes the users to talk just loud enough for best operation. Some telephones include limiter circuits to reduce volume of loud sounds. And some have more complicated hook switches and dial switches than those shown in Figure 1.

Two-bit phone patch

About the simplest circuit that can be used to connect an amateur station to the telephone line is shown in Figure 2. Resistors R-1 and R-2 provide the 900 ohm load

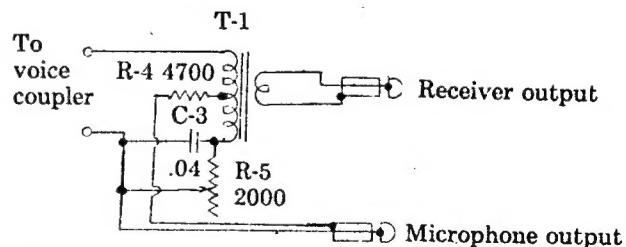


Figure 3

THE WALL STREET JOURNAL, WEDNESDAY, JANUARY 7, 1981

SCM re-invents the beer can

to match the phone line, and R-3 provides a 5 ohm load for the speaker output. There is no isolation between talking and listening circuits, however, so the operator will have to switch manually from transmit to receive, using the push-to-talk button. This circuit was described on page 69 of June 1978 *Worldradio*, and is hard to beat for simplicity. For the amateur who only occasionally runs a phone patch, it may be all that is needed.

VOX operation

To eliminate the need for manual switching, use the circuit shown in *Figure 3*. T-1 is a transistor output transformer, such as Radio Shack 273-1380. The combination of C-3 and R-5 form what is called a *balancing network*, to provide an impedance equal to that of the telephone line. Then the two sides of the transformer winding, the line, and the balancing network form the four arms of a bridge — or what telephone people call a *hybrid*. It allows energy from the receiver output to pass to the phone line, but prevents it from entering the microphone input. Energy coming from the phone line, however, does reach the microphone input. In this way, incoming and outgoing energy are separated so that you can use the VOX on your transceiver to do the switching automatically.

R-4 is provided to isolate the center tap of T-1 from ground. Telephone lines must always be isolated from ground, both for audio and for DC, otherwise there will be noise problems; frequently the switching and ringing functions will be impaired too.

It is assumed you will be using a voice coupler between your patch and the phone line. If you don't for any reason, you will have to isolate the patch from the line for DC. All that is needed is a 2 microfarad capacitor in series with each line.

2600 hertz ringoff

One problem you may encounter if you use the patch on long-distance calls ("long or short hauls") is having the connection suddenly broken because someone has decided to tune up 2600 hertz away from your carrier frequency. The phone companies use this frequency to signal the end of the contact, so if you make many patches that involve long-distance calls, it will pay to add a 2600 hertz filter to the circuit. *Figure 4* shows a suitable one, a series-tuned circuit using an 88 millihenry toroid and a .04 microfarad capacitor, which offers a very low impedance to 2600

hertz, but a high impedance at other frequencies.

Also shown in *Figure 4* are a pair of 2 microfarad capacitors connected as mentioned in the preceding paragraph, when needed to isolate the patch from the phone line for DC.

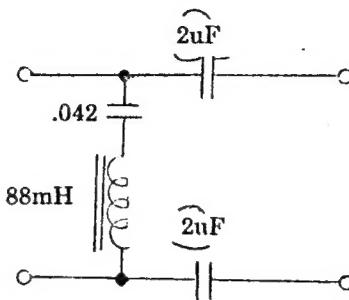


Figure 4

Dealing with the telephone company

Only general suggestions can be given here, as there are thousands of telephone companies to deal with, and no two will be exactly alike. In one case you may be dealing with another radio amateur and have no trouble at all. Or you may encounter hostility, if the representative happens to have a negative opinion of Amateur Radio. More often, you will have to do a lot of explaining because it may be the first time the representative has heard of such a thing.

Ask other local amateurs who have phone patches. They can usually help.

It's best to avoid using expressions like *phone patch*, as they don't form part of the telephone industry's official vocabulary. Ask instead for a "QKT voice coupler." If the representative doesn't know what that is, you might suggest checking their *Technical Reference Publication 42101*. You may have to be a bit persistent, but eventually you will find somebody who understands what you want. The telephone industry is so vast that nobody can know everything about it. But bear in mind that, at least in the United States, you aren't asking a favor. You have a right to connect your rig to the phone line according to FCC regulations.

Using the patch

This topic belongs to operating rather than construction, but a few words will be added here to round out the discussion. Don't abuse it. Tying up valuable frequencies in our crowded bands just to save the cost of a long-distance call is not appreciated by other amateurs, and endangers phone patching for everybody. Remember, when regulators regulate, they come down hard and usually knock out a lot of good things along with the bad. Don't make patches to countries where we don't have third-party agreements, or allow your guests to conduct communications that are not allowed by those agreements. You, the control operator, are responsible.

It's best to keep the dial tone, ringing tone, busy signal, and conversations with the operator and with the called party off the air. Such things would come under the heading of superfluous communication. If this is the first time for this particular patchee, explain to him or her what it's all about before you connect the phone line to your rig. Explain that you can't listen and talk at the same time, that the other party won't hear if you interrupt in the middle of a sentence. If manual switching is involved, mention that, and ask the party to say "over" when finished speaking so that you can switch from transmit to receive. And assure him or her that it's all legal; it's being done in accordance with FCC regulations.

Finally, don't forget to record the names of all third parties involved, and a brief description of what was discussed, or else make a recording of the conversation and keep it with your station records. This is one bit of log keeping that is still required. □

TX, "WORLD RADIO"

I HEARD RUMORS THAT THEY WERE GONNA
RUN AN EXOTIC CENTERFOLD... BUT A CUTAWAY
DRAWING OF AN HT 220...???

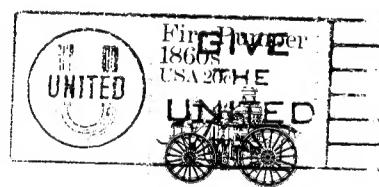


TX,
"INTERMOD"

HAMPDEN COUNTY RADIO ASSOCIATION, INC.

date	Calendar for 1982 Topic	chairman	speaker
Mar. 5	Linear Amps	Dick N8BQU	WA1CQF GENT
apr. 2	VHF, UHF, & Moonbounce	John AC1T	KIWHIS Dave
May 7	Flea Market	Larry K1cXU	
Jun. 4	Banquet		

HAMPDEN COUNTY RADIO ASSOCIATION, INC.
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ZERO BEAT 82

AC1T 10/82